

XV. *An Account of some extraordinary Effects of Lightning.*  
*By William Withering, M. D. F. R. S.*

Read March 18, 1790.

PERMIT me to request the attention of the Royal Society, whilst I mention a few facts relative to a thunder cloud, the lightning from which fused a quantity of quartzose matter.

This cloud formed in the south, in the afternoon of Sept. 3, 1789, and took its course nearly due north. In its passage it set fire to a field of standing corn; but the rain presently extinguished the fire. Soon afterwards the lightning struck an oak tree, in the Earl of AYLESFORD's park at Packington.

The height of this tree is 39 feet, including its trunk, which is 13 feet. It did not strike the highest bough, but that which projected farthest southward. A man, who had taken shelter against the north side of the tree, was struck dead instantaneously, his cloaths set on fire, and the moss (*lichen*) on the trunk of the tree, where the back of his head had rested, was likewise burnt. Two men, spectators of the accident, ran immediately towards him upon seeing him fall; and as it rained hard, and a small lake had collected almost close to the spot, the fire was very soon extinguished; but the effects of the fire on one-half of his body, and on his cloaths, were such as to shew, that the whole burning was instantaneous, not progressive.

Part of the electric matter passed down a walking stick, which the man held in his hand, sloping from him; and where the stick rested on the ground, it made a perforation about  $2\frac{1}{2}$  inches in diameter, and 5 inches deep. This hole I examined soon afterwards, and found nothing in it but the burnt roots of the grafs. All observation would probably have ended here, had not Lord AYLESFORD determined to erect a monument upon the spot, not merely to commemorate the event, but with an inscription, to caution the unwary against the danger of sheltering under a tree during a thunder storm. In digging the foundation for this monument, the earth was disturbed at the perforation before mentioned, and the soil appeared to be blackened to the depth of about ten inches. At this depth, a root of the tree presented itself, which was quite black; but this blackness was only superficial, and did not extend far along it. About two inches deeper, the melted quartzose matter began to appear, and continued in a sloping direction to the depth of 18 inches.

The specimens which accompany this Paper, and for which I am indebted to the attention of Lord AYLESFORD, will demonstrate the intense heat which must have existed to bring such materials into fusion.

Nº 1. A quartz pebble, one corner of which has been completely fused.

Nº 2. Sand, unmixed with calcareous matter, agglutinated by the heat. Within the hollow part of this mass, the fusion has been so perfect, that the melted quartzose matter has run down the hollow, and assumed nearly a globular figure.

Nº 3. Smaller hollow pieces, and one nearly flat, but all the flat ones have some hollow part \*.

\* These specimens were laid before the Society when the Paper was read. C. B.

Mr. WATT suggested to me, that the hollows had been occasioned by the expansion of moisture whilst the fusion existed.

I shall conclude with observing, that judging from the damage done to the oak tree, the stroke was not very great; and that having now an inducement to dig where the earth has been perforated by lightning, we may probably hereafter find fossil substances melted by it to a considerably greater extent.

